THE MINERAL INDUSTRY OF ZIMBABWE

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The Republic of Zimbabwe is a landlocked nation in southern Africa that is surrounded by Zambia to the north, Mozambique to the east, South Africa to the south, and Botswana to the west. It covers an area of 390,580 square kilometers (km^2) and supported a population of 12.6 million in 2003. Based on purchasing power parity, the gross domestic product (GDP) was estimated to be $24.03 billion and the per capita GDP to be $1,900 in early 2004. The deteriorating economy in 2003 experienced a negative 13.6% real GDP growth rate and an annual inflation rate for 2003 of 338%. The Government's poorly planned and violent land reform program badly damaged the commercial farming sector, which was the traditional source of exports and foreign exchange (U.S. Central Intelligence Agency, 2004§[1]). The mineral industry produced more than 35 mineral commodities chiefly from small-scale mines (table 1). Economic conditions forced many smaller mines to close between 2000 and 2003. Between 1998 and 2002, employment in the mining and quarrying sector declined to 43,000 workers from an estimated 61,000 and in the manufacturing sector, which includes the ferroalloys and iron and steel industries, to 171,000 from 208,000.

Government Legislation

In late 2002, the Ministry of Mines and Energy announced a new fiscal regime for the mining industry to help attract new investment; an effective date for the incentives, however, had yet to be announced. The incentives package will include new royalty taxes on minerals calculated as a percentage of the gross fair market value of the minerals produced. The new royalty rates will tax precious stones (10%), precious metals (3%), base metals (2%), industrial minerals (2%), coal bed methane gas (2%), and coal (1%). Corporate income tax on all mining companies will be decreased to a flat rate of 15% from the present 45%. "Mining companies shall also be granted the right to market their own minerals directly, in accordance with the provisions of the Minerals Marketing Corporation of Zimbabwe (MMCZ) Act and subject to adequate monitoring arrangements and reporting obligations on the part of the mining company" (Minerals Marketing Corporation of Zimbabwe, 2002§). MMCZ will continue to market the products for the companies that may wish to use its global marketing expertise. MMCZ was currently (2003) the marketer of all minerals produced in Zimbabwe except gold and silver, which must be sold to the Reserve Bank of Zimbabwe at a fixed exchange rate (Minerals Marketing Corporation of Zimbabwe, 2002§).

Production

The total value of mineral production, which was based on the official exchange rate of Z$824=U.S. $1.00, was $804.3 million in 2003. Chromium and value-added ferroalloys accounted for 36.3% of the total value of mineral production; nickel and cobalt, 20.7%; gold, 14.5%; platinum-group metals (PGM), 12.8%; coal, 8%; and asbestos, 5.4%. Despite the constraints of a deteriorating economy and industrial base, several of the major metals showed significant production increases for the year, including mine production of copper, iron ore, nickel and PGM and production of pig iron and crude steel. Most of the other minerals, however, saw production declines of from 5% to more than 60% during 2003. With the opening of two new mines, PGM production increased to 8,418 kilograms (kg) in 2003 compared with 932 kg in 2001 and was expected to be one of the few positive mineral industry trends for the next 5 years.

Trade

Zimbabwe had a negative balance of trade for the third year in a row, amounting to $525 million in 2002 and $402 million in 2003, of which emergency food imports made up 60% to 70% of the deficit. In 2003, total merchandise trade exports were valued at $1.23 billion, of which agricultural exports amounted to $516.6 million (42%), down from $646.6 million in 2002, and mineral and manufactured metal products to $492.3 million (40%), up from $426.6 million in 2002. The increased value of mineral exports was attributed to expansion of PGM production and exports and to a more-than 40% increase in world market prices for nickel. Historically a major export, gold exports declined in value to $137.4 million in 2003 from $236.1 million in 1998 owing to the 50% decline in production during the same period. The other parts of the minerals sector have also been seriously affected by the pegged exchange rate, limited capital availability, high inflation, and fuel and hard currency shortages during the past 6 years. Total merchandise trade imports were valued at $1.63 billion, of which food imports amounted to $281 million, and fuel and electricity imports, $227 million (International Monetary Fund, 2004§).

[1]References that include a section mark (§) are found in the Internet References Cited section.

Commodity Review

Metals

Chromium.—Production of chromite and ferrochromium was controlled by Zimbabwe Alloys Mines Limited (ZimAlloys) (which was owned 100% by Anglo American plc) and Zimbabwe Mining and Smelting Co. (Pvt.) Ltd. (Zimasco). During 2003, production of chromite ore declined by 15% to 637,099 metric tons (t), and production of high-carbon ferrochrome, by 5% to 245,299 t. No low-carbon ferrochrome or ferrosilicon was produced during the year. ZimAlloys owned four mines along the Great Dyke—Inyala, Middle Dyke, North Dyke, and South Dyke. As of 2003, the remaining chromite resources were reported to be 211.4 million metric tons (Mt) at South Dyke, 43.7 Mt at North Dyke, and 370,000 t at Inyala. Mining operations were suspended during 2002. All ore was sent to the ZimAlloys ferrochromium smelter at Gweru, where historical capacity was 40,000 metric tons per year (t/yr) of low-carbon ferrochrome, 45,000 t/yr of high-carbon ferrochrome, and 30,000 t/yr of ferrosilicon. During 2003, Zimalloys produced 39,179 t of high-carbon ferroalloys compared with 44,064 t during 2002 (International Chromium Development Association, 2004§).

Zimasco owned the Peak, Railway Block, Valley, South Dyke, Middle Dyke, and Mutorashanga chromite mines along the Great Dyke and the ferrochromium smelter at Kwe Kwe, which had the capacity to produce more than 220,000 t/yr of high-carbon ferrochrome in seven furnaces. Chromite reserves at the Peak underground mine were reported to be 2.6 Mt at a grade of 41% Cr_2O_3 and a chromium-to-iron ratio of 2.6. Production capacity at Peak was about 144,000 t/yr of lumpy chromite ore. The Railway Block Mine had remaining underground reserves of 800,000 t at a grade of 39% Cr_2O_3 and a production capacity of 180,000 t/yr of run-of-mine ore. The Valley Mine had reserves of 1.3 Mt at a grade of 35% Cr_2O_3 and a chromium-to-iron ratio of 2.0 with a capacity to produce from 60,000 to 96,000 t/yr of lumpy ore. Reserves at the South Dyke open pit mine were estimated to be 21 Mt at a grade of 40% Cr_2O_3 and a chromium-to-iron ratio of 2.1 with a capacity to produce 240,000 t/yr of lumpy ore. Reserves at the Middle Dyke open pit mine were estimated to be 27 Mt at a grade of 42% Cr_2O_3 and a chromium-to-iron ratio of 2.1 with a capacity to produce 120,000 t/yr of lumpy ore. The Mutoroshanga Mines had remaining working underground reserves of 14 Mt at a grade of 49% Cr_2O_3 and a production capacity of 244,000 t/yr of run-of-mine ore. During 2003, Zimasco chromite mines were operating at from 30% to 70% capacity. During 2003, about 593,000 t of chromite ore was produced, which was slightly more than 60% of capacity (International Chromium Development Association, 2004§).

Gold.—Government policies continued to affect the gold sector negatively during 2003. After significant investment and development of the gold sector in the 1990s, production peaked at 27,666 kg of gold in 1999, but dropped by more than 50% since then to 12,564 kg gold in 2003. By law, all gold had to be sold to the Reserve Bank of Zimbabwe with payment in local currency at a fixed rate, which was lower than the rate at which the companies could buy foreign exchange. This put the gold sector at a disadvantage with respect to other companies whose commodities could be exported for hard currency. The Government paid gold companies 50% of earnings at a rate of Z$800=US$1.00. The other 50% of earnings was supposed to be paid in U.S. dollars, but foreign exchange shortages frequently prevented or delayed these payments (Africa Online, 2003§).

Independence Gold Mines (Pvt.) Ltd., the leading gold producer in Zimbabwe, produced between 5,000 and 6,000 kilograms per year (kg/yr) from its Arcturus, How, Redwing, and Shamva Mines. During 2003, a controversy arose over the purchase of Independence Gold Mines by the South African black economic empowerment company, Metallon Gold Corp. (Pemberton International Investments Limited) from Lonmin during 2002. A group of Zimbabwean investors in Stanmarker Mining (Pvt.) Ltd. was suing Metallon for breach of contract over plans for Stanmarker to acquire a 40% interest in Independence Gold (CountryWatch, Inc., 2004§).

Of the major gold producers in 2003, Ashanti Goldfields Co. Ltd. of Ghana, which merged with AngloGold Ltd. of South Africa to form AngloGold Ashanti Ltd. in early 2004, continued to struggle with high costs and lack of fuel and equipment availability for its Freda-Rebecca Mine near Bindura. Annual production at Freda-Rebecca declined to 1,589 kg of gold in 2003 compared with 3,056 kg of gold in 2002. With the depletion of two high-grade ore blocks, ore and grades treated were 1.2 Mt at a grade of 1.75 grams per metric ton (g/t) in 2003 compared with 1.15 Mt at a grade of 3.22% in 2002. The mine was being re-engineered in late 2003 to develop new ore reserves and to stabilize underground ore production at a rate of 80,000 metric tons per month. At yearend 2003, Ashanti reported measured and indicated gold resources at Freda-Rebecca of 15.6 Mt at a grade of 2.51 g/t of which proved and probable reserves amounted to 4.1 Mt at a grade of 2.5 g/t. Ashanti was seeking buyers for the mine during 2003 (Ashanti Goldfields Co. Ltd., 2004§). Rio Tinto Zimbabwe (Pty) Ltd., which was owned 56% by Rio Tinto plc of the United Kingdom, saw production from its Renco and Patchway Mines drop by 34% to 778 kg of gold in 2003. The company processed 38,000 t of ore at a grade of 2.13 g/t that yielded 62 kg gold at the Patchway Mine and 234,000 t of ore at a grade of 3.59 g/t that yielded 715 kg of gold at the Renco Mine. Rio Tinto sold the Patchway Mine in July 2003 (Rio Tinto plc, 2004a§). Following a writedown of $12 million in assets of the Blanket Mine at yearend 2001, Kinross Gold Corp. reported production of 1,336 kg of gold in 2002 and none in 2003. Falcon Gold Zimbabwe Ltd. operated the Dalny and Venice gold mines at Kadoma and the Golden Quarry Mine at Shurugwi. For the year that ended on September 30, 2003, Falcon produced 847 kg of gold, down from 1,093 kg for the preceding financial year. The company reported that profits were insufficient to reinvest in locating additional gold reserves beyond those currently identified in its three mines (Falcon Investment Holdings SA, 2003§).

Iron and Steel.—Production of crude steel at Zimbabwe Iron and Steel Company (ZISCO) operations rebounded by 45% to 152,000 t during 2002 but this amount was 41% less than the 2000 production levels. Pig iron output was also about 50% of 2000 production. The ZISCO steel plant had the capacity to produce 800,000 t/yr of crude steel. Zisco was receiving assistance from China to help maintain its operations during 2003 and 2004, including a $42 million loan from the Export and Import Bank of China and a

deal with the Shougang International Trade and Engineering Corporation to procure equipment and materials needed to reline the main number 4 blast furnace. Lack of working capital had reduced its operating levels to about 20% of capacity, which was inadequate to meet even domestic demand [Financial Gazette (Zimbabwe), 2003§].

Nickel.—Bindura Nickel Corp. Ltd. operated the Shangani and Trojan nickel mines, a nickel smelter, and a nickel refinery. In April 2003, Anglo American plc sold its 52.9% interest in Bindura Nickel to Mwana Africa Holdings for $8 million. During 2003, Bindura completed two new capital investment projects—the rebuilding of the nickel smelter furnace and construction of a new decline at the Shangani Mine. Production of refined nickel decreased by 28% to 12,657 t owing to the 70% drop in toll-refined nickel matte, chiefly from Botswana and the Nkomati nickel mine in South Africa (Anglo American plc, 2003§). Rio Tinto operated the Empress nickel refinery, which processed matte supplied from Botswana on a toll basis. The company toll-refined 6,199 t of nickel in 2003 compared with 6,412 t in 2002.

Platinum-Group Metals.—Makwiro Platinum Mines Ltd. was owned by Zimbabwe Platinum Mines Ltd.'s (Zimplats) (70%) and Impala Platinum Mines Ltd. (Implats) (30%). Makwiro operated the Ngezi open pit platinum mine and the Selous metallurgical complex, which was located 77 kilometers (km) to the north. Facilities at Selous included a mill and concentrator, a smelter, and a base-metals refinery. The refinery was being kept on a care-and-maintenance basis. The smelter's white PGM matte output was sent to Implats facilities in South Africa for refining. Implats held an 82% equity interest in Zimplats and was committed to making 15% of its remaining equity shares available to Zimbabwean citizens. During the financial year that ended on June 30, 2004, Makwiro treated 2 Mt of Ngezi ore at a grade of 3.23 g/t gold, palladium, platinum, and rhodium (known as the 4 elements, or 4E) with an 83% recovery rate that yielded 2,652 kg of platinum; 2,273 kg of palladium; 304 kg of gold; and 243 kg of rhodium. In addition, the operation was designed to recover 1,300 t/yr of nickel and 1,000 t/yr of copper. With the prevailing high nickel prices, byproduct nickel production accounted for 16% of revenues during the 2004 financial year. Platinum and palladium production was at about 88% of design capacity for the first phase of the Ngezi/Selous project, chiefly as a result of a serious smelter incident in July 2003, which resulted in the smelter being offline for several weeks (Zimbabwe Platinum Mines Ltd., 2004§).

Despite high local operating costs and an unfavorable exchange rate, approval was given to proceed with expansion plans, which will include construction of a 1-million-metric-ton-per-year (Mt/yr) underground mine and a 1.5-Mt/yr concentrator at Ngezi. The $109 million capital project will expand production to 10,420 kg/yr of, in order of weight, platinum, palladium, gold, and rhodium by 2006. Platinum production will increase to 6,221 kg/yr from 4,385 kg/yr. Although not yet approved, a second phase expansion costing $200 million to $300 million could expand production to 15,863 kg/yr of 4E for the 2007-08 period, and a third phase costing an additional $200 million to $300 million could expand production to 22,395 kg/yr of 4E sometime after 2009. Approval of these future expansions will depend on the economic and political risk environment in the country at the time. Proven and probable ore reserves as of June 30, 2004, were reported by Zimplats to be 36.4 Mt at Ngezi South Tribute at a grade of 1.53 g/t platinum, 1.23 g/t palladium, 0.23 g/t gold, 0.13 g/t rhodium, 0.09% nickel, and 0.05% copper, and 304.5 Mt of underground ore at Ngezi at a grade of 1.65 g/t platinum, 1.34 g/t palladium, 0.24 g/t gold, 0.14 g/t rhodium, 0.1% nickel, and 0.07% copper. Total measured, indicated, and inferred mineral resources, including reserves, at the Ngezi South Tribute, the Hartley Complex, and other Zimplat Tenements were 2.49 billion metric tons at an average grade of 4.1 g/t 4E plus 0.1% copper and 0.1% nickel (Zimbabwe Platinum Mines Ltd., 2004§).

Zimasco Consolidated Enterprise Platinum Ltd. (ZCE Platinum), which was a Mauritius-based company that was a 50-50 partnership between Aquarius Platinum Ltd. of Australia and Implats, operated the Mimosa underground mine at the southern end of the Great Dyke, near Zvishavane. During the financial year that ended on June 30, 2004, ZCE Platinum completed the $41 million expansion of its underground operations and commissioning of the surface infrastructure to reach its planned capacity of 4,200 kg/yr of 4E. During the year, 1.33 Mt of ore at an average grade of 3.71 g/t from the Mimosa Mine was treated compared with 755,000 t in the 2003 financial year, which resulted in a 73% increase in 4E production to 3,714 kg. Breakout of production by element included 1,910 kg of platinum, 390 kg of palladium, 256 kg of gold, and 157 kg of rhodium. Mimosa also had the capacity to produce 187 kg/yr of ruthenium, 124 kg/yr of iridium, 1,885 t/yr of nickel, 1,645 t/yr of copper, and 73 t/yr of cobalt byproducts. Operating costs were affected by a newly revised foreign exchange control system, which included a controlled currency auction system that resulted in a decrease in the exchange rate to Z$4,200=$1.00 from Z$5,520=$1.00, and by the introduction of new royalty rates in January 2004. As of June 30, 2004, total measured, indicated, and inferred mineral resources at Mimosa were reported to be 88.8 Mt at an average grade of 3.93 g/t 4E, of which proved and probable reserves at the South Hill were 29.7 Mt at an average grade of 3.64 g/t 4E (Aquarius Platinum Ltd., 2004§).

In April 2003, Anglo American Platinum Corp. Ltd. and Anglo American Corporation Zimbabwe Ltd. (Anzim) announced plans to proceed with the $92 million development of the Unki platinum mine project near Gweru on the Great Dyke. The project will involve construction of an 85,000-metric-ton-per-month mine and concentrator. Concentrates will be shipped to Anglo Platinum facilities in South Africa for smelting and refining. Anglo Platinum will also manage the operation. Full production of 1,894 kg/yr of platinum and 1,244 kg/yr of palladium was expected by 2007. The project was based on measured and indicated resources of 48.6 Mt at a grade of 4.98 g/t 4E, of which 37.1 Mt at a grade of 4.30 g/t 4E was proved and probable reserves (McKay, 2003§; Anglo American Platinum Corp. Ltd, 2004§).

Industrial Minerals

Asbestos.—The asbestos industry produced 147,209 t of asbestos valued at $43 million in 2003, down 12% from the 2002 level. More than 60% of production was exported to, in order of volume, Brazil, India, Iran, and Japan. The industry employs almost 7,000 people in the mining and manufacturing sectors and an estimated 70,000 people in downstream business, and produces such products

as asbestos cement building products. African Associated Mines (Pty.) Ltd. (a subsidiary of African Resources Ltd. of South Africa) produced chrysotile asbestos from its Gaths and Shabanie Mines in the towns of Mashaba and Zvishivane, respectively, which were nearly totally dependent on asbestos for their survival. Faced with international concerns over the health effects of asbestos-bearing products and declining markets, Zimbabwe established the National Chrysotile Asbestos Task Force in 1998. The Task Force, which was composed of Government, industry, and trade, environment, and health organization, has been working to protect the Zimbabwe asbestos industry through the introduction of worker education programs and safe use codes for handling, storing, and transporting asbestos. A recent report (South Africa National Economic Development and Labour Council, 2002§) describes the conditions at each mine and the steps taken to protect worker health and exposure. The Shabanie Mine, which employed 3,500 people, had proven reserves of 17.2 Mt, sufficient for 17 more years of mine life. Shabanie processed 1.75 Mt/yr of ore from two underground shafts to produce 72,000 t of asbestos with a 4.6% fiber yield. The smaller Gaths Mine employed 2,250 workers and extracted about 6.6% of white chrysotile asbestos fiber from each 100 t mined. The asbestos cement building products companies were also concerned about the impact that the ban on asbestos products in South Africa could have on sales to South Africa and the transshipment of Zimbabwean asbestos exports through South Africa.

Diamond.—Murowa Diamond Private Limited (a joint venture between Rio Tinto Zimbabwe Ltd. and Rio Tinto) announced plans to develop the Murowa Diamond Project, which is located near Zvishavane in South Central Zimbabwe. An investment of $10 million was being made in a small-scale plant to begin diamond production at Murowa in 2004. An updated feasibility study defined a reserve of 18.7 Mt at a grade of 0.9 carats per metric ton. Initial production will come from 140,000 t of weathered material. An expansion of the mine will be considered in 3 years if satisfactory marketing and regulatory arrangements are in place (Rio Tinto plc, 2004b§).

Lithium.—Bikita Minerals (Pvt.) Ltd., which was owned by AMZIM Minerals Ltd., was one of the world's leading producers of lithium-bearing petalite. Production declined by 63% to 12,131 t compared with that of 2002. The company exported four grades of petalite, which included grades for lithium tiles and container glass, and a separate spodumene concentrate.

Mineral Fuels

During 2003, production levels at Wankie Colliery Co. Ltd., which operated the country's only coal mine near Hwange, were about 24% less than in 2002, chiefly owing to a shortage of foreign exchange and spare parts for maintenance. By product line, Wankie produced 854,605 t of coal, chiefly for export; 1.69 Mt of coal for use in the nearby Hwange Power Station; 228,389 t of coke, of which 127,800 t was exported; and about 6 million cubic meters of coke oven gas, down sharply from more than 24 million cubic meters in 2002. To take advantage of rising prices of coke used in the ferrochrome and steel industries, Wankie announced plans to invest between $15 million and $52 million to open a new coking coal mine to be referred to as "3 Main," a new coke oven battery, and a new truck-loading facility to double coking-coal capacity to about 4 Mt/yr. Coke production would also double to 400,000 t/yr from the current 200,000 t/yr (Bain, 2004§; Business Day, 2004§).

Zimbabwe has no domestic reserves of oil or gas and depended on coal, hydropower, and imports to meet its energy requirements. Like many African countries, charcoal and firewood were major sources of fuel, particularly for household cooking. The country no longer had a functioning oil refinery and spent more than $227 million in 2003 to import energy and petroleum products from South Africa. Fuel shortages that resulted from the economic crisis in the country remained a major problem during the year.

Infrastructure

Most of landlocked Zimbabwe's bulk commodities were moved by rail on the state-owned National Railways of Zimbabwe (NRZ). All major cities and industrial centers were linked to Botswana, Mozambique, South Africa, and Zambia by the NRZ. Petroleum products were piped through Mozambique via the Beira pipeline to Feruka and then moved west via the Mutare-Harare pipeline or trucked on Zimbabwe's 85,784-km road network. Additional petroleum products were imported via railroad tanker cars through South Africa.

Outlook

The short-term outlook for the mining sector is not favorable with the exception of several new platinum developments and a new diamond mine. The platinum projects being undertaken by South African companies have been able to proceed with logistical support from South Africa to overcome fuel and other shortages; exchange controls and increasing Government regulatory controls, however, could jeopardize the viability of some of these projects. Excess Government intervention in the economy and in state-run industries has been a major contributor to the growing number of closed mines and suspended projects that are undermining the ability of the mining sector to continue to generate more than 25% of Zimbabwe's foreign export earnings. Price and currency controls make it difficult for companies to benefit from a rising trend in global commodity prices, which will have a continuing negative impact on ferroalloys, gold, and steel operations. The natural-resource endowment and a well-developed infrastructure remain in place. Attracting the open competition and entrepreneurship needed to stimulate the economy, however, will be difficult until the Government can complete the privatization of its interests in the energy, mining, and rail sectors; repay the debts of the parastatal industries; and loosen its foreign exchange rules.

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TABLE 1

ZIMBABWE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		1999	2000	2001	2002	2003
METALS						
Chromite, gross weight		605,405	668,043	780,150	749,339	637,099
Cobalt, metal[2]		121	79	95	99	79
Copper:						
Mine output, concentrate, Cu content		4,511	2,104	2,057	2,502	2,767
Metal:						
Smelter output, blister/anode, primary[e]		14,500	14,500	2,160	-- [r]	--
Refinery output, refined/cathode, primary		10,000	10,200	8,000 [r]	7,200 [r]	7,200
Gold	kilograms	27,666	22,069	18,050	15,469	12,564
Iron and steel:						
Mine output, iron ore:						
Gross weight	thousand tons	599	451	361	272	367
Fe content[e]	do.	300	225	180	136	184
Metal:						
Pig iron	do.	270	277	156	122	131
Steel, crude	do.	255	258	149	105	152
Ferroalloys:						
Ferrochromium		246,782	244,379	243,534	258,164	245,299
Ferrosilicon chromium	thousand tons	16	20	17	--	--
Nickel:						
Mine output, concentrate, Ni content		11,164	8,160 [e]	10,120	8,092	11,600 [e]
Refinery output, refined metal:						
Refined from domestic materials		9,106	6,678	7,440	6,765	9,517
Toll refined from imported materials[3]		10,676	12,931	12,084	10,812	3,140
Total refined nickel metal		19,782	19,609	19,524	17,577	12,657
Platinum-group metals:						
Palladium	kilograms	342	366	371	1,943	3,449
Platinum	do.	479	505	519	2,306	4,270
Rhodium	do.	37	40	42	218	377
Ruthenium	do.	NA	NA	NA	178	322
Iridium	do.	NA	NA	NA	84	NA
Osmium		NA	NA	NA	NA	NA
Total		858	911	932	4,729	8,418 [e]
Silver	kilograms	5,181	3,799	3,449	1,711	747
Tantalum, mine output, Ta content		1	1	21	338	4
INDUSTRIAL MINERALS						
Asbestos	thousand tons	115	152	136	168	147
Barite		1,000 [e]	5,032	7,464	--	--
Cement, hydraulic[e]	thousand tons	1,000	1,000	800	600	600
Clays:						
Bentonite, (montmorillonite)		140,000 [e]	--	--	--	--
Other clays[4]		12,000	589	2,247	3,789	--
Diamond	carats	45,324	23,028	--	--	--
Feldspar		2,250	2,059	1,055	591	246
Fluorspar		--	--	--	250	--
Gemstones:						
Amethyst	kilograms	NA	10,376	840	NA	NA
Emerald	do.	20,000	33	57	NA	NA
Graphite		11,405	11,838	11,836	9,912	7,675
Kyanite		4,000 [e]	10,970	9,682	5,657	745
Lithium minerals, gross weight		36,671	37,914	36,103	33,172	12,131
Magnesite		5,356	4,029	2,439	2,366	1,333
Mica		1,300 [e]	--	--	--	--
Nitrogen, N content of ammonia		60,800	58,400	57,500	60,900	55,300
Perlite[e]		5,356 [5]	5,000	5,000	5,000	5,000
Phosphate rock, marketable concentrate		126,000	77,662	86,611	107,854	95,496

See footnotes at end of table.

TABLE 1--Continued
ZIMBABWE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		1999	2000	2001	2002	2003
Stone, sand and gravel:						
Granite, black		130,000 e	130,000	385,532	408,550	47,007
Limestone	thousand tons	1,500 e	1,500	3,799	3,169	922
Quartz, rough[6]	do.	40 e	121 e	28	6,790	2,356
Sulfur:						
Pyrite:						
Gross weight		48,793	69,119	98,037	87,592	93,010
S content (32.6%)		15,900	22,530	31,960	28,555	30,321
Byproduct acid, metallurgical and coal process gas[e]		2,500	2,500	2,000	2,000	2,000
Total		18,400	25,030	33,960	30,555	32,321
Talc		1,000 e	989	1,273	911	--
Vermiculite		13,898	16,215	11,632	23,803	20,016
MINERAL FUELS AND RELATED MATERIALS						
Coal, bituminous	thousand tons	4,576	3,809	4,064	3,721	2,872
Coke, metallurgical [e]	do.	600	600	245	224	200

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. . [r]Revised. NA Not available. -- Zero.

[1]Table includes data available through September 2004.

[2]"Metal" includes metal content of compounds/salts and may include cobalt recovered from nickel-copper matte imported for toll refining.

[3]Toll refined data includes all of Empress Refinery production from Botswana imports and part of Bindura output.

[4]Includes fire clay.

[5]Reported figure.

[6]Includes rough and ground quartz, as well as silica sand.

Major sources: Chamber of Mines of Zimbabwe and Robertson Economic Information Services, Harare.